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## Introduction

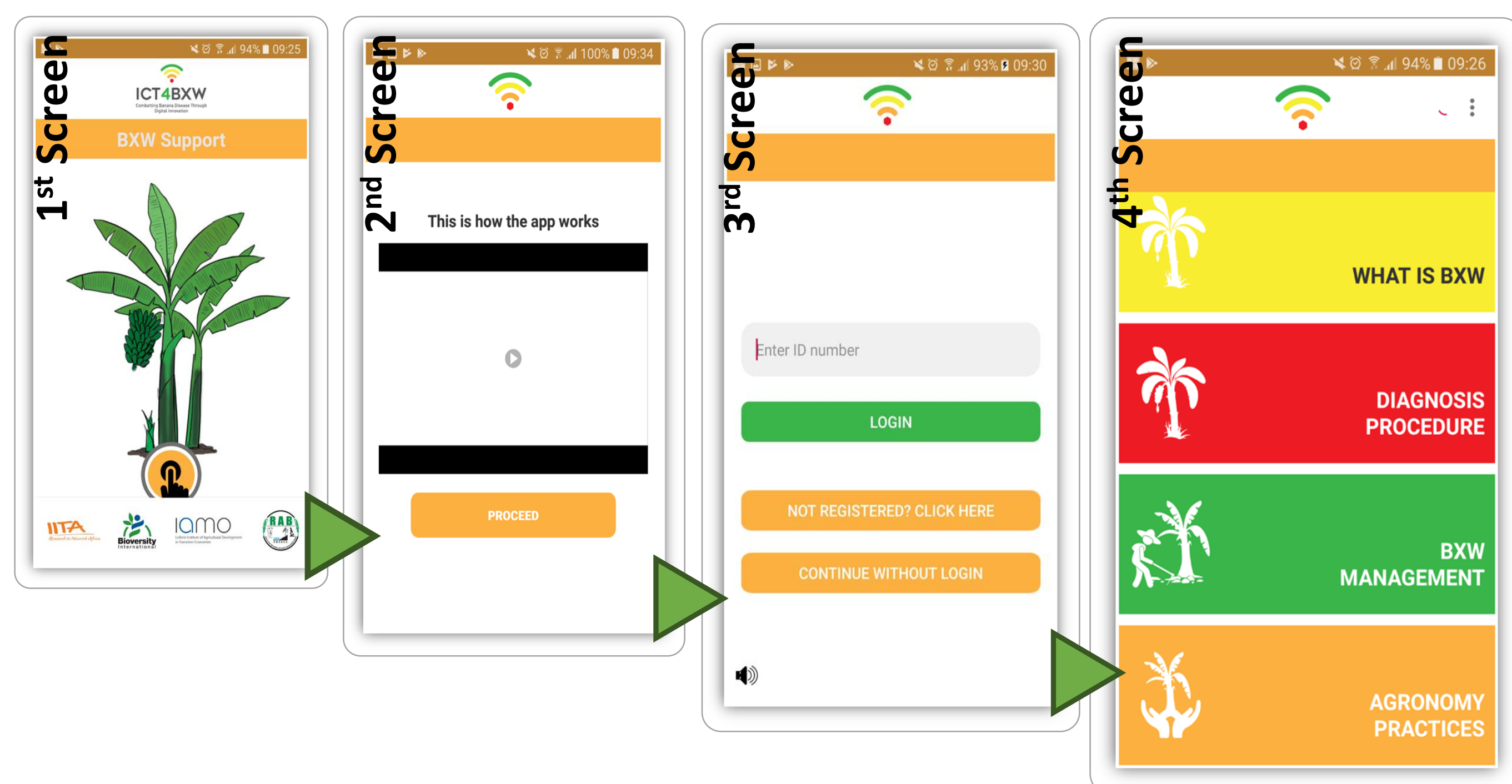
BXW-app is an Android application developed by IITA led ICT4BXW project to aid village extension agents (farmer promoters or FPs) in diagnosing Banana Xanthomonas Wilt (BXW) disease, and give advice on disease control and prevention, as well as general banana agronomic practices.

Given that the vast majority of the application's users were unskilled with the use of smartphones and unfamiliar with digital data collection and information provision, capacity building was essential before ICT4BXW project could proceed with launching ICT4BXW app for field-validation in 69 intervention villages.

## BXW-App in a nutshell

BXW-App is accessible via Google Play Store. At first use the app requires connectivity with the Internet to download visual (e.g. video, illustrations) and audio content. Thereafter, the app can be operated offline, however uploading of collected data requires Internet connectivity again. The app has four sections (**Fig. 1**), of which three are accessible without user registration, namely, "What is BXW?", "BXW Management", and "Banana Agronomic Practices".

BXW-App can be used by two kinds of users: (1) Registered FPs (using their national ID-number to login) who can register farmers and perform disease diagnostic procedures. (2) Non-registered users who's access to app functionalities is limited to disease and banana agronomy information (**Fig.1**)



**Fig. 1:** Registration page offering option to register or continue without login (3<sup>rd</sup> screen) and BXW-App menu (4<sup>th</sup> Screen).

## Objectives

To train 69 farmer promoters and 27 sector agronomists from 8 Rwandan districts (Muhanga, Gisagara, Rulindo, Burera, Kayanza, Gatsibo, Karongi and Rubavu) on how to use the BXW App for controlling and preventing BXW- in Rwanda.

## Methods

Training took place over two days, each district trained separately. Every first training day in total was attended by FPs (n=16) and sector agronomists (n=8) who had participated in designing BXW-App and previously received basic training on smartphone use. The second day was also attended by FPs and sector agronomists for whom the project and app were new (n=53 and n=19 respectively). The idea was that FPs and agronomist whom participated in the first training day would support in training others on the second day.

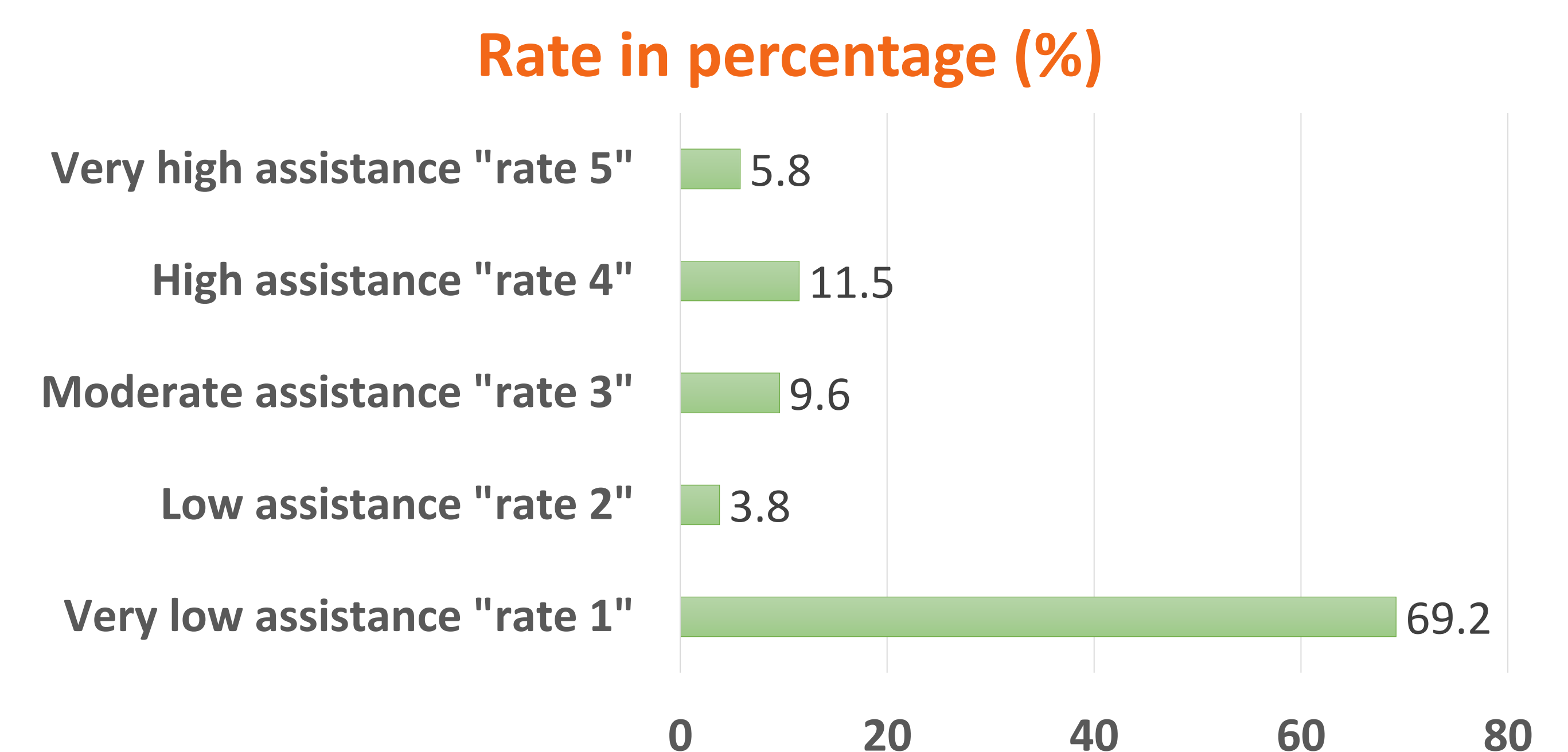
Apart from being training in smartphone and application use, participants were informed about the ICT4BXW project, what the project had done this far and what it aimed to achieve. They were also briefed about their tasks and responsibilities during the app validation period.

## Outcomes

- All participants received information about ICT4BXW project aims and objectives, as well as instructions about their expected performance during the app validation period.
- All 69 FPs were equipped with a Samsung J3 smartphone which will be available for them to use throughout the app validation period.
- All 69 FPs registered themselves in BXW-App under trainers' facilitation.
- Each FP registered one or two farmer profiles in order to test their capability to register farmers and run diagnostic procedures once operating independently in their respective village.
- Sector Agronomists were encouraged to install BXW app in their own smartphone to facilitate continued learning about the app's functionalities and guarantee that FPs can access the necessary local support with uploading collected data and in case of challenges with operating the phone and/or app, updates, etc.



**Fig. 2 (left):** Participants of the training in Rulindo district. **Fig. 3 (right):** Sector agronomists and RAB technician facilitating an FP from (district) with registering himself as application user.



**Fig. 4:** How 53 non-Trained FPs rate the assistance got from 16 trained FPs during the second round of district level training.

FPs trained on the second day were asked if they appreciated the help from fellow FPs who had been trained on day one. The response was negative:

- FPs trained on day one were equally struggling with some functionalities of the BXW-App, partially due to ongoing updates.
- The one day training proved too short for FPs, who are after all new to smartphone use, to capture and master all functionalities of BXW-App and be able to transfer that knowledge to other, non-trained FPs.

## Recommendations

- Monitor quantity and quality of data uploaded by FPs.
- Improve FPs performance through follow-up by Sector Agronomists, RAB technicians and IITA to ensure that FPs have the capacity to be confident and effective in using BXW-App.